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Rosemarie Contella
Name

Signature

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application Of: O'Brien et al.

For: Nanotube Coatings For Implantable Electrodes

the specification of which is being transmitted herewith

Assistant Commissioner of Patents
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT
Pursuant to 37 CFR 1.56

1. Applicants submit herewith patents, publications or other information of which they are aware, which they believe may be material to the examination of this application and in respect of which there may be a duty to disclose in accordance with 37 CFR 1.56.

The filing of this Information Disclosure Statement (IDS) shall not be construed as a representation that a search has been made (37 CFR 1.56(g)), an admission that the information cited is, or is considered to be material to patentability or that no other material information exists.

The filing of this IDS shall not be construed as an admission against interest in any manner (Notice of Jan. 9, 1992, 1135 O.G. 13-25, at 25).

2. Attached is Form PTO-1449. However, copies of the listed United States items are not being provided.

3. A concise explanation of the possible relevance of the listed information items is as follows:

Patents:

U.S. Application Publication No. 2002/0049495 to Kutryk et al. teaches methods and compositions for coating a medical device with a matrix that promotes adherence of endothelial cells to the medical device. The matrix may comprise a fullerene ranging from about C60 to about C100 arranged as a nanotube. At paragraph 0071 (page 6), attachment of the fullerene moiety is to a reactive amino group site of an amino-containing polymer.

U.S. Patent No. 4,542,752 to DeHaan et al. relates to implantable devices including a porous substrate coated with a porous carbon coating. The coating is formed via a plasma deposition/degradation method by which the substrate surface is subjected to a gaseous environment including a hydrocarbon. The gaseous environment is energized to degrade and polymerize the hydrocarbon, thus forming a porous carbon lattice structure. Similar porous ceramic coatings are provided in U.S. Patent No. 4,784,160 to Szilagyi.

U.S. Patent No. 5,370,684 to Vallana et al. shows implantation prostheses coated with films of biocompatible carbon. Carbon is subjected to a plasma beam generated by triode sputtering under vacuum conditions. Carbon atoms sputtered off the target are directed to the substrate to deposit a thin biocompatible film thereon.

U.S. Application Publication No. 2003/0153965 to Supronowicz et al. shows electrically conducting nanocomposites including an electrically conducting nanoscale material and a biocompatible polymer and/or a biocompatible ceramic. The nanoscale material may be a carbon nanotube or similar material. An exemplary nanoscale material includes carbon nanotubes and polylactic acid.

U.S. Application Publication No. 2003/0102099 to Yadav et al. discloses morphologically engineered nanotube dispersed powders. The powders comprise carrier particles and attached particles dispersed on the surface thereof. The carrier particles may have any useful form, and the nanoparticles may specifically assume a tubular shape such as those of fullerenes (C60, C70, C82), silicone clusters and nanotubes of various compositions. The powders may be used in fabricating bio-medical products by their inclusion as fillers in polymers, ceramics and metal matrix composites.

U.S. Patent No. 3,783,868 to Bokros teaches percutaneous implant devices including a refractory stem coated with pyrolytic carbon obtained by the co-decomposition of silicone and some other carbide forming additive. The porous coatings of elemental metal on the implantable device of U.S. Patent No. 4,784,159 to Szilagyi are also achieved by plasma deposition methods.

U.S. Application Publication No. 2003/0093107 to Parsonage et al. teaches medical devices, such as balloons, catheters, filters and stint delivery systems. The devices comprise nanocomposites as matrix materials and at least one of the plurality of filler particles. Among the suitable filler

materials are carbon and ceramic nanotubes, nanowires and nanofibers, including single and multi-walled fullerene nanotubes.

U.S. Application Publication No. 2003/0139794 to Jenney et al. shows an implantable lead comprising a lead body including a conductive polymer electrode disposed therein. The conductive polymer electrode comprises an insulating, biocompatible polymer having conductive particles, such as carbon nanotubes, dispersed therein. Similar leads are shown in the implantable defibrillation system of U.S. Patent No. 5,632,770 to Schaldach. In this patent, the defibrillation electrode is coated with an inert element such as carbon, a nitride, carbide, a carbon nitride, or the like. The pacemaker of U.S. Patent No. 5,609,611 to Bolz et al. also includes an electrode coated with an inert material such as carbon, nitride, carbide, or a carbon nitride.

U.S. Application Publication No. 2003/0083697 to Baudino et al. shows an implantable neurological lead having at least one low polarization electrode carried on the distal end thereof. The electrode has a base material and a coating of porous carbide, nitride, carbon nitride or oxide layer of a transition metal.

U.S. Application Publication Nos. 2003/0080085 and 2002/0199176, both to Greenberg et al., disclose a microfluidic delivery system coated with ultra-nanocrystalline diamond comprised primarily of phase pure randomly oriented diamond crystallites. The system is impermeably sealed and inert for implantation in a body. Similarly, the implantable devices of U.S. Application Publication No. 2002/0120296 to Mech et al. are

provided with a uniform hermetic coating of an ultra nanocrystalline diamond material. U.S. Patent No. 6,048,328 to Haller et al. shows implantable drug infusion devices, the valves of which may be coated with diamond or diamond like carbon.

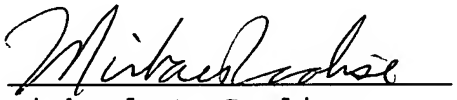
The prosthetic devices of U.S. Patent No. 5,387,247 to Vallana et al. are coated with a thin layer of biocompatible turbostratic carbon produced by triode cathodic sputtering.

U.S. Application Publication No. 2003/0181328 to Hwang et al. relates to a process for producing carbon nanotubes "per se" via low temperature thermal chemical vapor deposition.

4. The remaining patents on the attached Form PTO 1449 are discussed in the prior art section of the application or were culled from the inventors' files.

5. The person making this statement is the agent who signs below, who makes this statement on the information supplied by the inventors and the information in the agent's file.

Respectfully submitted,

By: 

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet	6	of	6	Attorney Docket Number	31611.0028

Application Number	
Filing Date	November 12, 2003
First Named Inventor	O'Brien et al.
Group Art Unit	
Examiner Name	

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. 1	U.S. Patent Document Number	Kind Code 2 (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	3,783,868		Bokros	01-08-1974	
	2	4,495,039		Cerise et al.	01-22-1985	
	3	4,542,752		DeHaan et al.	09-24-1985	
	4	4,602,637		Elmquist et al.	07-29-1986	
	5	4,603,704		Mund et al.	08-05-1986	
	6	4,612,100		Edeling et al.	09-16-1986	
	7	4,784,159		Szilagyi	11-15-1988	
	8	4,784,160		Szilagyi	11-15-1988	
	9	5,370,684		Vallana et al.	12-06-1994	
	10	5,387,247		Vallana et al.	02-07-1995	
	11	5,609,611		Bolz et al.	03-11-1997	
	12	5,632,770		Schaldach	05-27-1997	
	13	6,048,328		Haller et al.	04-11-2000	
	14	2002/0049495A1		Kutryk et al.	04-25-2002	
	15	2002/0119176A1		Greenberg et al.	08-29-2002	
	16	2002/0120296A1		Mech et al.	08-29-2002	
	17	2002/0165321A1		Wang et al.	11-07-2002	
	18	2003/0080085A1		Greenberg et al.	05-01-2003	
	19	2003/0083697A1		Baudino et al.	05-01-2003	
	20	2003/0093107A1		Parsonage et al.	05-15-2003	
	21	2003/0102099A1		Yadav et al.	06-05-2003	
	22	2003/0139794A1		Jenney et al.	07-24-2003	
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	24	2003/0181328A1		Hwang et al.	09-25-2003	
	25	4,919,135		Phillips, Jr. et al.	04-24-1990	
	26	5,872,422		Xu et al.	02-16-1999	
	27	5,973,444		Xu et all	10-26-1999	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. 1	Foreign Patent Document Office3	Number4	Kind Code5 (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T6

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Unique citation designation number. 2 See attached Kinds of U.S. Patent Documents. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.